U.S.S.N. 09/479,146

REMARKS

Reconsideration and reexamination of this application, as amended, are respectfully requested. Claims 12-14 and 16-18 are pending in this application upon entry of this Amendment. The Applicant has amended claims 12-14 and 16-17, has cancelled claims 1-11 and 15, and has added new claim 18.

Claim Rejections – 35 U.S.C. § 102

In the Office Action mailed on August 23, 2002, the Examiner rejected claims 1-8 and 10 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6, 018,778 issued to Stolowitz ("Stolowitz"). This rejection is moot as claims 1-8 and 10 have been cancelled.

Claim Rejections – 35 U.S.C. § 103

The Examiner rejected claims 9 and 11-17 under 35 U.S.C. § 103(a) as being unpatentable over Stolowitz. This rejection is moot with respect to claims 9, 11, and 15 as these claims have been cancelled. The Applicant believes that the claimed invention is patentable over Stolowitz and has amended independent claims 12 and 16 to more clearly define thereover.

1. **The Claimed Invention**

The claimed invention, as recited in amended independent claim 12, is a method for providing data blocks from a magnetic tape to a host. Amended independent claim 16 provides an associated system. The method and system are for use in a "single magnetic tape RAIT" environment. Such a single magnetic tape RAIT environment includes a magnetic tape having data blocks and a parity block in which the data blocks

-5-

and the parity block are serially arranged on the magnetic tape with the parity block following the data blocks. The parity block is based on the data blocks as conventionally known.

The method includes reading the data blocks sequentially from the magnetic tape and determining if the data block currently being read is good or bad. The data block currently being read is provided to the host if the currently being read data block does not follow a bad data block. If one of the data blocks is bad, the method includes storing the good data blocks following the bad data block in sequential order.

Parity of the good data blocks is accumulated as the data blocks are being read. The parity block is then read from the magnetic tape after all of the data blocks have been read. If one of the data blocks is bad, the bad data block is then reconstructed from the accumulated parity of the data blocks and the parity block in order to form a reconstructed good data block. The reconstructed good data block is then provided to the host and then the stored good data blocks are provided to the host in sequential order.

2. The Claimed Invention Compared with Stolowitz

The claimed invention generally differs from Stolowitz in that the claimed invention is directed to an implementation of RAIT on a single magnetic tape. Stolowitz is directed to conventional RAID and RAIT configurations which employ multiple disks and/or tapes. Such conventional configurations are useful when the loss of a whole device drive occurs. In contrast, a common failure mode of a single tape is the loss of a data block as opposed to the failure of the entire tape. In such single tape reading applications, the access to the tape is sequential in which previous data is read before current data is read. As such, the parity block is on the magnetic tape after the data blocks. The claimed invention takes advantage of these configurations in order to provide higher speed operation in the event of read errors for single tape RAIT implementations.

-6-

In view of the foregoing amendments and remarks, the Applicant believes that amended independent claims 12 and 16 patentably distinguish over Stolowitz. Claims 13-14 and 17-18 depend from one of amended independent claims 12 and 16. Therefore, the Applicant requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 103(a).

CONCLUSION

In summary, claims 12-14 and 16-17, as amended, and newly added claim 18 meet the substantive requirements for patentability. The case is in appropriate condition for allowance. Accordingly, such action is respectfully requested.

If a telephone or video conference would expedite allowance or resolve any further questions, such a conference is invited at the convenience of the Examiner.

Respectfully submitted,

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Attachment

-7-

U.S.S.N. 09/479.146

MARKED UP VERSION OF APPLICATION CHANGES

IN THE CLAIMS:

12. (AMENDED) In a magnetic tape having data blocks and a parity block <u>in which the data blocks and the parity block are</u> serially arranged [,] <u>on the magnetic tape with the parity block following the data blocks and</u> the parity block being based on the data blocks, a method for [reading] <u>providing the</u> data blocks <u>from the magnetic tape to a host</u>, the method comprising:

reading <u>the</u> data blocks sequentially from the magnetic tape;

determining if [any of the data blocks are bad as the data blocks are being read] <u>the data block currently being read is good or bad;</u>

<u>providing the data block currently being read to the host if the currently being read data block does not follow a bad data block;</u>

<u>if one of the data blocks is bad, storing the good data blocks following the bad data block in sequential order;</u>

accumulating parity of the good data blocks as the data blocks are being read;

reading the parity block from the magnetic tape <u>after all of the data blocks have been read</u>; [and]

<u>if one of the data blocks is bad,</u> reconstructing [a] <u>the</u> bad data block from the accumulated parity of the data blocks and the parity block <u>in order to form a reconstructed good data block;</u>

<u>providing the reconstructed good data block to the host; and</u>

<u>providing the stored good data blocks to the host in sequential order after the reconstructed good data block has been provided to the host.</u>

13. (AMENDED) The method of claim 12 wherein:

accumulating parity of the good data blocks includes exclusive ORing the parity of the good data blocks read prior to the [current] good data block <u>currently</u> being read with the [current] good data block <u>currently</u> being read.

14. (AMENDED) The method of claim 13 wherein:

reconstructing [a] <u>the</u> bad data block includes exclusive ORing the parity of the good data blocks with the parity block.

16. (AMENDED) A data storage array system for [reading] <u>providing</u> data blocks <u>to a host</u>, the system comprising:

magnetic tape having data blocks and a parity block <u>in which the data blocks and the parity block are serially arranged on the magnetic tape with the parity block following the data blocks and the parity block being</u> based on the data blocks;

-1-

U.S.S.N. 09/479,146

a controller for reading the data blocks sequentially from the magnetic tape and for reading the parity block from the magnetic tape, wherein the controller [operable for determining if any of the data blocks are bad as the data blocks are being read] determines if the data block currently being read is good or bad, the controller providing the data block currently being read to the host if the currently being read data block does not follow a bad data block, the controller reading the parity block from the magnetic tape after all of the data blocks have been read; [and]

a buffer, wherein if one of the data blocks is bad, the buffer stores the good data blocks following the bad data block in sequential order; and

a parity accumulator for accumulating parity of the good data blocks as the controller reads the data blocks[,];

wherein if one of the data blocks is bad, the controller reconstructs [a] the bad data block from the accumulated parity of the good data blocks and the parity block in order to form a reconstructed good data block;

wherein the controller provides the reconstructed good data block to the host and then provides the good data blocks stored in the buffer to the host in sequential order after the reconstructed good data block has been provided to the host.

17. (AMENDED) The system of claim 16 [further comprising] wherein:
[a buffer for storing the good data blocks read by the controller after the bad data block until the controller reconstructs the bad data block to preserve ordering of the data blocks during reading.]
the parity accumulator accumulates parity of the good data blocks by exclusive ORing the parity of the good data blocks read prior to the good data block currently being read with the good data block currently being read.

-2-